STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Brooklawn Memorial Park **Cumberland County** **Portland, Maine** **A-48-71-L-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment # 1**

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S. § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

I. REGISTRATION

A. Introduction

Brooklawn Memorial Park (Brooklawn) has applied for an Air Emission License amendment, permitting the operation of an additional Class IV-A crematory incinerator (Unit 20), and to move Units 98 and 2K into the same new building as the new unit.

The equipment addressed in this license is located at 2002 Congress St., Portland, Maine.

B. Emission Equipment

The new crematory incinerator, Unit 20, is a Matthews Environmental Solutions model IE43-SPP Plus with the following specifications:

Class Incinerator	IV-A
No. of Chambers	2
Type of Waste	Type 4
Max. Design Combustion Rate (lb/hr)	225
Auxiliary Fuel Input: **Primary Chamber (MMBtu/hr)** **Secondary Chamber (MMBtu/hr)**	 1.5 1.5
Emission Control	Afterburner

The crematory combustion gases vent to a 22 foot Above Ground Level (AGL) stack. This represents 60% of the formula Good Engineering Practice (GEP) stack height.

C. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emission" levels as defined in the Department's *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (TPY)	Future License (TPY)	Net Change (TPY)	Significant Emission Levels
PM	9.8	12.1	2.3	100
PM_{10}	9.8	12.1	2.3	100
SO_2	2.2	3.1	0.9	100
NO_x	5.6	8.3	2.7	100
CO	4.6	6.8	2.2	100
VOC	0.2	0.5	0.3	50

This modification is determined to be a minor modification and has been processed as such.

D. Facility Classification

With the annual operating hours restriction on the emergency generator, the facility is licensed as follows:

- As a synthetic minor source of air emissions, because Brooklawn is subject to license restrictions that keep facility emissions below major source thresholds for criteria pollutants; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

II. BEST PRACTICAL TREATMENT

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in

06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Unit 20

Unit 20 is a Matthews Environmental Solutions model IE43-SPP Plus crematory incinerator with a loading capacity of 750 lbs and an incineration rate of 225 lb/hr. Unit 20 consists of a primary and secondary chamber with a heat input rating of 1.5 MMBtu/hr each. The secondary chamber is maintained at a temperature of at least 1,600°F with a retention time of greater than one second. Unit 20 exhausts through its own stack.

BACT for the crematory is the following:

1. Emission Limits

Emissions information is based on a license allowed particulate matter emission limit of 0.12 gr/dscf, corrected to 12% CO_2, the burning of natural gas as an auxiliary fuel, and the use of the following factors:

The BACT emission limits for the natural gas burner portion of the total exhaust were based on the following:

PM/PM_{10}	0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115 BACT
SO_2	0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
NO_X	100 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
CO	84 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98
VOC	5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98

The BACT emission limits for the remains portion of the total exhaust were based on the following:

PM	0.12 gr/dscf corrected to 12% CO_2 based on 06-096 C.M.R. ch. 104
SO_2	2.17 lb/ton, AP-42 Table 2.3-1 dated 7/93
NO_X	3.56 lb/ton, AP-42 Table 2.3-1 dated 7/93
CO	2.95 lb/ton, AP-42 Table 2.3-1 dated 7/93
VOC	0.299 lb/ton, AP-42 Table 2.3-2 dated 7/93

The pound per hour BACT emission limits for Unit 20 are as follows:

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Natural Gas Burner	0.15	0.15	Neg.	0.29	0.24	0.02
Remains	0.57	0.57	0.24	0.40	0.33	0.03
Total Emission Limit	0.72	0.72	0.24	0.69	0.57	0.05

2. Visible emissions from the crematory stack shall not exceed 10% opacity on a six (6) minute block average basis.

3. Operating Parameters

   a. Operating temperature in the secondary chamber shall be maintained at or above 1,600°F for the duration of the burn cycle, with a stack gas retention time, at or above 1,600°F, of at least 1.0 second.

   b. To ensure an efficient burn and to prevent odors and visible emissions, the secondary chamber shall be preheated, as specified by the manufacturer, until the pyrometer measures a temperature of at least 1,200°F

   c. No remains shall be introduced into the primary chamber until the temperature in the secondary chamber has reached 1,200°F.

   d. Once the burn cycle has commenced by introduction of primary chamber combustion, the crematory shall be operated in an efficient manner, and as specified by the manufacturer, for the period of time between preheat and reaching the set operational temperature to be a minimum of 1,600°F in the secondary chamber.

   e. A pyrometer and 1/4-inch test port shall be installed and maintained at that location of the crematory or refractory-lined stack which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1,600°F.

   f. A log shall be maintained recording the weight of the remains, preheat time, charging time, and the temperature of the secondary chamber every 60 minutes after start-up until, and including, final shutdown time. For facilities operating a chart recorder, the start time, date, and weight charged shall be logged on the chart.

   g. The crematory operator(s) shall receive adequate training to operate the crematory in accordance with the manufacturer's specifications and shall be familiar with the terms of the Air Emission License.

C. New Building

Brooklawn is planning to construct a new building to house Unit 20, with enough space to move Units 98 and 2K in to the same building at a later date. In order to meet the GEP stack height requirements for the new building, all crematories housed in the new building shall have a stack height of no less than 22 feet AGL.

D. Annual Emissions

1. Brooklawn shall be restricted to the following annual emissions, based on a calendar year basis. The tons per year limits were calculated based the following:

   - hourly emission limits for the five crematories and
     - 1300 charges per year each (at maximum charging capacity) for Unit 1 and Unit 2;
     - 2000 charges per year each (at maximum charging capacity) for Unit 98 and Unit 2K;
     - 2000 charges per year (at maximum charging capacity) for Unit 20; and
   - 100 hours/year of operation of the Emergency Generator.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Units 1 and 2	2.30	2.30	0.42	1.12	0.91	0.08
Units 98 and 2K	7.20	7.20	1.77	4.40	3.68	0.16
Unit 20	2.54	2.54	0.82	2.61	2.18	0.18
Emergency Generator	Neg.	Neg.	Neg.	0.10	0.01	0.003
Total TPY	**12.1**	**12.1**	**3.1**	**8.3**	**6.8**	**0.5**

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 C.F.R. Part 52, Subpart A, § 52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100, are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO_2e).

The quantity of CO_2e emissions from this facility is less than 100,000 tons per year, based on the following:

- the facility's charge limits;
- worst case emission factors from the following sources: U.S. EPA's AP-42, the Intergovernmental Panel on Climate Change (IPCC), and *Mandatory Greenhouse Gas Reporting,* 40 C.F.R. Part 98; and
- global warming potentials contained in 40 C.F.R. Part 98.

No additional licensing actions to address GHG emissions are required at this time.

III. AIR QUALITY ANALYSIS

According to 06-096 C.M.R. ch. 115, the level of air quality analysis and monitoring are determined on a case-by-case basis. Based on analysis for similar sources, the size of the source, the allowable emissions, the location, and the stack height, ambient air quality standards, including increments, are not expected to be violated. Therefore, an ambient air impact analysis will not be required for this source at this time.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this above source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-48-71-L-A, subject to the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

The following shall replace condition 16 (C) and (E) of Air Emission License A-48-71-K-R.

(16) Crematories: Unit 1, Unit 2, Unit 98, Unit 2K, and Unit 20

C. Each crematory shall not exceed a particulate matter emission limit of 0.12 gr/dscf corrected to 12% CO_2. Licensed allowed emissions for each crematory shall not exceed the following:

Crematories Emission Limits

	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Unit 1	0.97	0.97	0.161	0.43	0.35	0.03
Unit 2	0.97	0.97	0.161	0.43	0.35	0.03
Unit 98	0.90	0.90	0.221	0.55	0.46	0.04
Unit 2K	0.90	0.90	0.221	0.55	0.46	0.04
Unit 20	0.72	0.72	0.24	0.69	0.57	0.05

Compliance shall be demonstrated through stack testing by request of the Department, in accordance with the appropriate method found in 40 CFR Part 60, Appendix A. [06-096 C.M.R. ch. 115, BPT/BACT]

E. Operating Parameters [06-096 C.M.R. ch. 115 BPT/BACT]

The following operating parameter requirements apply to Unit 1, Unit 2, Unit 98, Unit 2K, and Unit 20.

1. Operating temperature in the secondary chamber shall be maintained at or above 1,600°F for the duration of the burn cycle, with a stack gas retention time, at or above 1,600°F, of at least 1.0 second.

2. To ensure an efficient burn, and to prevent odors and visible emissions, the secondary chamber shall be preheated, as specified by the manufacturer, until the pyrometer temperature measures at least 1,200°F

3. No remains shall be introduced into the primary chamber until the temperature in the secondary chamber has reached 1,200°F.

4. Once the burn cycle has commenced by introduction of primary chamber combustion, the crematory shall be operated in an efficient manner, and as specified by the manufacturer, for the period of time between preheat and

reaching the set operational temperature to be a minimum of 1,600°F in the secondary chamber.

5. A pyrometer and 1/4-inch test port shall be installed and maintained at that location of the crematory or refractory lined stack which provides sufficient volume to insure a flue gas retention time of not less than 1.0 second at a minimum of 1,600°F.

6. A log shall be maintained recording the weight of the remains, preheat time, charging time and the temperature of the secondary chamber every 60 minutes after start-up until, and including, final shutdown time. For facilities operating a chart recorder, the start time, date, and weight charged shall be logged on the chart.

The following is a new condition.

(16) Crematories: Unit 1, Unit 2, Unit 98, Unit 2K, and Unit 20

G. Units 98, 2K, and 20 shall exhaust through a stack of not less than 22 feet AGL when housed in the newly constructed building containing Unit 20. [06-096 C.M.R. ch. 115, BPT]

DONE AND DATED IN AUGUSTA, MAINE THIS 26th DAY OF February, 2020.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ For
GERALD D. REID, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-48-71-K-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 1/23/20
Date of application acceptance: 1/23/20

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

FILED

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State of Maine
Board of Environmental Protection